1. How can NESDIS improve their services and data?

- Bigger budget needed for resources
- Better web interface: difficult finding things, break into subdivisions, better search for data, demos and tutorials would be helpful
- Centers have data that isn't on-line, but indeed have it; way for users to know
- Formal feedback to user comments, to make improvements

Data format – monthly international; too large a file, break up files so they are easier to download
  - for some data, only a day is needed, need to be able to subset; start-end data, geographic breakdown
  - likes daily international reports
  - geographic location – currently requires lat./lon.; a map would be nice to click on the area
  - make QC'd data available – how reliable is the data; completeness and quality
  - methods of getting from the top of the website down to the data; provide easy ways to get there
  - user-friendly ways to get the data; data format description for different users; educators, first-time users, scientists
  - monthly int'l description was good
  - have a scription which provides info on the data (metadata)
  - use existing standards for metadata files for downloaded file and archiving
  - Help Desk may be needed; quality assurance questions
  - status of download bar needed
  - liaison with public, when enough input, there's feedback on how to change system (feed back drives data retrieved system)

- Admiral's integrated website – find everything (data) that is available; is currently very difficult to do
- Obtain all satellite data that is needed
- Have access to data via metadata so that data is available through a direct link
- Formal data users group – have rotating members (such as NOAA family of services group) – feedback should not be overwhelming
- Workshop provides information to participants – good forum to provide information users are unaware of
- Need for near real-time data
- Incomplete data reports – some stations report only when it rains (example Illinois); can't depend on a single station for continuous data; an increase in stations which report 100% of the time would be very helpful
- COOP station information is adequate for data completeness, but the data is not available until a month or so later; data is needed much sooner
- Are there no-cost or low-cost things which can be done to provide COOP data on a near real-time network?

- Develop a web-based way of reporting COOP type of data in a near real-time availability
- CD-ROM surface data is not in the same format if ordered as a single station by users
- NOAA port – setup so people can receive data through it, not just from web
- NCDC providing modeled data – just getting into this; becoming more and more important; overseas data is becoming less, so modeled data is becoming more important

2. How can NESDIS Centers best provide for customer feedback?

- Data guru for each database would be useful for users
- On-line forums to go to with feedback (rotating membership), provide input
- NGDC – has an advisory group that may be helpful
- Maintenance for on-line forum – get users to know this forum exists
- State Climatologists – might be a group which would be part of the on-line forum
- Periodic testing of on-line system – test to see how a new user reacts, easily or with difficulty
- Tutorials on how to acquire data from the on-line system
- Formal feedback process so users can suggest improvements, and a team to make changes. If changes already done, let users know.
- Concern that individuals might be overwhelmed with feedback, may be an indirect process.
- Create email lists of users for communication.

3. Technology of the future -- How can it help?

Scenario Planning (things are going to change in the next 10 years)

Tropical storms – prediction of increased storms affecting coastlines; their effects and destruction; watersheds affected, economic, social, cultural
- Crisis management/habitat destruction – as development increases, coastal areas are affected; ecosystem management; environmental management (ties to strategic plan)

Environmental management – tied to the strategic plan

- Public education and outreach – people expect a higher quality of information; high visibility
- 2011 solar maximum – only 1 series of GOES satellite in 2005 with wide range of new instruments; impact on data center…larger data streams, availability of information to power companies and affected industries
- Solar issues – better understand and predict where solar data will affect Earth
- Availability of observed data – foreign data is becoming less; modeled data is becoming more valuable
- Integrated approach – in situ, measured instruments provide
- Government will become a smaller workforce – privatization of data means that the government will have to partner more with non-government groups
- Cooperation between NOAA and WMO
- Partnerships between government entities – NASA does a good job at this; this should be done now, because data and resources will be needed later for mission-essential projects
- Government is not able to keep up with private technologies – operations and research have
- Transportation – increasing
- Shortages of water – UN suggested 7 billion people facing water shortages by 2050; affects farming
- Aging population – loss of knowledge from workforce; affects COOP network
- Less farmable land – environmental challenges
- Technology is progressing; computing power is increasing; bigger bandwidths; increasing price (hope to keep sat. cost same because of tech improvements)
- More data – fewer people resources; many people don't know how to read data…education problem
- Field managers – need data…information…knowledge for information decision-making
- Communication methods will be upgraded/updated – Internet 2, bigger backbone systems
- Uncertainties – global warming; social; cultural; political (resource allocation); economy; future workforce; energy supplies (hydrogen cars, fossil fuels, etc.)

limitations; weather patterns; terrorism; global pandemics (new diseases); deforestation
- Food sources – being depleted (swordfish)

Returning to the present, what implications do you see for your requirements for NESDIS data products?

- When NESDIS is using new technology, train people in the fields (marketing issues) through outreach and training
- Build partnerships – more inter- and intra-agency relationships; be less colloquial in discussions
- Data assimilation and modeling will become very important as more data is available
- More outreach to users; more customer driven (can't become a hobby shop)
- Improved techniques of data mining so users can find desired information; good discovery tools and data warehousing
- International data accessibility – ways to establish and improve acquisition of foreign data and partnerships; future data-sharing

Summary

What can NESDIS do to prepare?

- Outreach to users re: more customer driven data
- Improve techniques of data mining so users can find what they need (imp. As data sets grow)
- Data warehousing- develop good discovery tools
- Flexibility instrument design
- In case data flow is interrupted, put back-ups in place (for near real-time)

Array of data from different sources (Ted)   PARKING LOT ISSUE

- As more data is input, the inter-operability will occur
- CLASS – get data into standard formats, allows transparency of data
- No standard formats between data sources, causes problems
- Data cannot be proprietary; should be fully accessible to public
- Need to focus more on metadata for data quality and interoperability
- Encapsilation of metadata so user can get into data
- Stronger connection between data access and data discovery systems
- Blur the distinction between data and metadata; get metadata back into the data
- Close the hydraulic loop by integrating water – related agencies

Government entities are responsible for developing (themselves, by contractor, etc.) metadata

4. New data acquisitions: What data should NESDIS archive?

- Archive commercial imaging
- Storage will be resource intensive
- GOES data before it becomes operational
- Build a comprehensive end-to-end integrated ocean observing system
- Real-time data QC for real-time data feeds
- Streaming data mining algorithms for real-time data
- Intra-agency partnerships – close the ecosystem loop for water-related agencies
- Who should decide what items NESDIS should archive? (possibly the advisory board, who should be members of the advisory board?)
- Data archive board exists at NCDC; only consists of NESDIS people currently
- Lightening data – proprietary currently; NCDC must be careful about who it distributes this data to
- Baseline data sets, scientific data projects – what data are appropriate to archive?
- Archiver and data provider – form an effective partnership (on-going relationship with feedback and communication) which allows the data to be useful before the data is fully collected (CCSDS)
- Tie what's collected to strategic themes (priorities)

5. New products and services: What should we plan for?

- Comprehensive and flexible integrated observing system
- Customer services and requirements
- Products related to air quality and water quality will be needed – resources are not available to do this
- See more products related to quality of life (biosphere, chemical, etc.)
- Tutorials and products which help develop data savvy decision makers and users (edu. outreach, training)
- NESDIS can provide standards-based educational standards (focused portals)
- Flag metadata useful to edu. standards
- Fund a project to merge old data sets with digital – need to make new products backward compatible (continuity, homogeneous)
- High resolution, shallow water estuary data – integrate the "nations" which contribute to the whole picture of the data
- Partner with agencies already doing education outreach work.

6. What other issues need to be addressed?

Next year's conference: Bring all data users within NOAA together; do an integrated, end-to-end pilot before conference using data from multiple sources (to show capabilities – diff. Scales, temporal and spatial data)

Combine this conference with GOES User Conference – meet annually

Forward presentations to participants after conference

EPA has a way of getting toxic database information by using ZIP code; by getting metadata search method